Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington DC 20554

In the Matter of	)	
	)	
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations	)	IB Docket No. 97-95
	)	RM-8811

COMMENTS OF THE
WIRELESS COMMUNICATIONS ASSOCIATION INTERNATIONAL, INC.

The Wireless Communications Association International, Inc. ("WCA"), by its attorneys, hereby submits its comments with respect to the *Further Notice of Proposed Rulemaking ("FNPRM")* issued in the above-captioned proceeding.[1]

WCA strongly supports the Commission's efforts to create a plan for the 36.0-51.4 GHz band and otherwise modify its rules to achieve optimal usage of that spectrum by fixed wireless and satellite providers. Subject to certain minor adjustments proposed herein, the proposals set forth in the *FNPRM* will give fixed wireless providers greater operational certainty *without* reducing the amount of spectrum currently available to them. As such, the *FNPRM* represents a sound and workable solution that will minimize

[1] FCC 01-182 (rel. May 31, 2001). WCA is the trade association of the wireless broadband industry. Its members include entities that provide or support the provision of wireless broadband services using, *inter alia*, the 37.0-40.0 GHz band. Accordingly, WCA has a direct and immediate interest in the Commission's resolution of the issues raised in the *FNPRM*.

sharing burdens and facilitate more rapid deployment of fixed wireless services, to the ultimate benefit of consumers.

At bottom, WCA believes that the Commission's actions in this proceeding must be guided by the principles set forth at footnote 65 of the *FNPRM*:

> [I]n the United States and in some other parts of the world, the primary FS application below 40 GHz is ubiquitous terrestrial broadband services. These FS operators intend to compete with wireline and fiber-optic services. To compete successfully against these services, FS providers must assure their customers very high availability and quality. To ensure high availability and quality, FS operations require more protection from potential interference than some other services with lower availability and quality requirements. If FS providers cannot provide adequate availability and quality, FS will fail to compete effectively with wireline and fiber-optic services.

At a minimum, then, the Commission's rules for satellite usage of the 37.0-40.0 GHz band must protect existing and planned broadband fixed wireless ("BWA") systems from harmful interference, and provide them with the technical flexibility necessary to sustain future growth. First and foremost, BWA links normally compete directly with fiber optic systems or act as "last mile" extensions of fiber optic links when fiber cannot be timely and economically extended. This requires BWA networks to have a minimum availability of 99.999% (5 x 9's).[2] Designing a BWA system to that standard is further complicated by line-of-sight requirements that limit deployment of BWA systems significantly. For example, in major urban areas where roof space is sometimes unavailable, BWA operators may be required to deploy receivers in individual office suites or other less advantageous locations. And, even where roof space is available, it is

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[2] Sandri *et al.*, "Co-existence Requirements for Fixed Service Systems in the 37.0-40.0 GHz Band," National Spectrum Managers Association Newsletter, at 3 (May 2001). The availability issue is particularly significant for some high-density fixed wireless systems ("HDFS"), whose links are deployed across a very wide range of elevation angles and thus are much more sensitive to satellite downlink interference than more traditional fixed wireless networks or HDFS networks with smaller concentrations of high elevation angle links. *Id.*

often occupied by other antenna systems (*e.g.*, radio/TV, mobile phones or pagers). In many cases, these limitations often preclude BWA operators from moving their equipment even a few feet to escape unfavorable link geometries.[3]

It must also be remembered that BWA operators may deploy a hybrid of point-to-multipoint and point-to-point networks, depending on the coverage and capacity requirements of their customers. For example, point-to-multipoint systems can be installed to ascertain traffic demand in previously unserved territories.[4] Once a building exceeds a capacity requirement, a BWA operator may either add point-to-multipoint overlays or install a higher-capacity point-to-point link. Typically, point-to-point links are deployed when the customer capacity requirement is higher than about 10 mpbs, or where point-to-multipoint links otherwise are unable to deliver the required performance.[5] In addition, to satisfy the demands of "high capacity" customers, BWA operators must often reuse their assigned spectrum as much as possible, which requires effective intra-cell and inter-cell interference mitigation techniques. These include operation as close as practicable to the fade margin needed for 99.999% availability.[6]

Accordingly, given the technical considerations set forth above, WCA supports the Commission's proposal to adopt the power flux density ("PFD") limits already agreed to at the 2000 World Radiocommunication Conference ("WRC-2000") for satellite

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[3] *Id.* at 5.

[4] *Id.* at 4.

[5] *Id.*

[6] *Id.*

operations in the 37.0-42.5 GHz band.[7] As noted in the *FNPRM*, those PFD limits appropriately favor wireless services over satellite services in the 37.0-40.0 GHz (alternatively referred to herein as the "39 GHz band") and 42.0-43.5 GHz bands.[8] WCA also supports the Commission's proposal to require a stronger PFD reduction for non-geostationary satellite orbit ("NGSO") FSS systems in the 37.5-40.0 GHz band than that adopted at WRC-2000, *i.e.* a 12 dB reduction rather than a 10 dB reduction.[9] It is worth noting that a 12 dB reduction represents a significant and painstakingly crafted compromise position for the fixed wireless industry. Indeed, WCA believes that a PFD reduction of 20 dB is necessary to minimize harmful interference to fixed wireless receivers operating at 37.5-40.0 GHz, and the Commission itself proposed a reduction of 15 dB during the negotiations leading up to WRC-2000.[10] Nonetheless, in the interests of achieving an immediate resolution and providing both fixed wireless and satellite operators with greater certainty on this issue, WCA supports the Commission's proposed PFD reduction of 12 dBm.

The Commission also requests comment on, *inter alia*, "the appropriate percentage of time [the Commission] should permit operations that exceed [its] PFD

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[7] *See FNPRM* at ¶ 40.

[8] *Id.*

[9] *Id.* at ¶ 41.

[10] The Commission must not forget that harmful interference to even a relatively small number of receivers in the 37.0-40.0 GHz band may have a disproportionate effect on providers using that spectrum for broadband service. This is because the 37.0-40-0 GHz band is utilized primarily for service to commercial properties in urban areas. Hence, interference suffered by one fixed wireless receive antenna on a rooftop of a commercial building could eliminate service to as many as, for example, 200 desktop computers that are connected to that antenna. The adverse effect of such interference on fixed wireless deployment is exponential when multiplied across potentially hundreds of buildings.

limits for NGSO and GSO FSS systems in the 37.5-40.0 GHz band."[11] For the reasons set forth in the contemporaneous comments filed in this proceeding by Winstar Communications, Inc. ("Winstar"), WCA believes that it will not be possible for the Commission to arrive at an across-the-board limit or series of satellite PFD limits that could provide adequate protection under the infinite variety of operational and environmental conditions in which fixed wireless providers must operate.[12] Instead, the Commission should leave this matter to private negotiations between fixed wireless and satellite providers, who are most familiar with the technical requirements of their systems and the environmental characteristics of their markets, and have substantial economic incentives to arrive at fair and workable arrangements for sharing the 37.5-40.0 GHz band. The blueprint for such private negotiations can and should be the Commission's *Secondary Markets* policy, which would permit FSS operators to negotiate directly with incumbent BWA 39 GHz licensees for whatever sharing, partitioning and/or disaggregation arrangements are necessary for efficient and rational deployment of the spectrum.[13]

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[11] *FNPRM* at ¶ 43.

[12] For instance, the performance of any given BWA cell site will depend upon the amount of spectrum available (and thus how much spectrum must be re-used), rain zone conditions and subscriber configuration. Since the deployment of fixed wireless subscriber terminals is an ongoing daily process, these factors must be constantly reexamined to determine if technical adjustments are necessary.

[13] *See Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, 15 FCC Rcd 24203, 24207 (2000) ("[S]econdary markets create incentives for existing wireless licensees to transfer their rights to use spectrum to those who value the spectrum the most and can make the most productive use of it, to migrate to less congested frequencies, and to upgrade to more spectrum efficient technologies. With better functioning secondary markets, existing providers and potential new entrants can gain access to some or all of the spectrum they may need to be able to provide new and innovative wireless services to the public.").

The Commission also seeks comment on its proposal to treat satellite earth stations in the 37.5-40.0 GHz band the same as terrestrial fixed wireless stations operating under Part 101 of the Commission's Rules, such that, for example, a fixed wireless holder of a Part 101 Economic Area ("EA") license could not construct a new station within 16 kilometers of its licensed area without first coordinating with all FSS earth stations within 16 kilometers of adjacent areas.[14] For the reasons set forth in Winstar's comments, WCA submits that this proposal imposes inequitable technical and economic burdens on EA licensees in the 39 GHz band, and thus puts deployment of that spectrum for fixed wireless broadband service at risk. Above all else, and unlike the vast majority of FSS providers who intend to operate in the 39 GHz band, fixed wireless EA licensees *paid* for their spectrum at auction. Against this backdrop, WCA believes that the inequity of restricting fixed wireless deployment at 39 GHz for the benefit of the FSS is self-evident, and that the Commission's interference protection rules for FSS usage of the band must be drafted accordingly.

WCA also wishes to emphasize that the concept of giving co-channel facilities stations at 39 GHz a 16 kilometer zone of protection at the borders of their licensed services areas remains a matter of substantial debate within the engineering community, and in fact is under active consideration by the IEEE 802.16 Broadband Wireless Access Working Group. Indeed, on March 6, 2001, WCA submitted a study to the Group which addressed this very issue and recommended that a distance of 10 kilometers be used, and only if the RF receive level exceeds -87 dBm at the border.[15] WCA's concerns have

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[14] *FNPRM* at ¶ 49.

[15] A copy of WCA's submission, titled "Amendments for Coexistence of High Density Fixed

since been incorporated into a new development project approved by the IEEE Standards Association on August 17, 2001, which will investigate co-existence issues in the 39 GHz band in greater detail.[16] Absent agreement within the IEEE as to the appropriate distance limitation between co-channel facilities at 39 GHz, it would be highly premature for the Commission to give FSS operators in the 39 GHz band the benefit of a 16 kilometer zone of protection that may prove to be excessive and thus may handicap further deployment of fixed wireless broadband services over that spectrum.

Finally, in view of the substantial risk of interference to BWA operations from FSS systems sharing the 37.0-40.0 GHz band, WCA believes the Commission should supplement its above-described interference protection rules by (1) requiring FSS systems to provide neighboring BWA systems with adequate prior notice of their intent to construct "gateway" stations in the 37.0-40.0 GHz band, so as to facilitate private negotiations as to the appropriate means of sharing the spectrum, and (2) limiting the number of gateway stations in the 37.0-40.0 GHz band that may be constructed by any single FSS operator. On the latter point, two principles should govern. First, the Commission has already designated the 39 GHz band primarily for fixed wireless operations[17] Second, in many cases BWA and FSS systems in the 39 GHz

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Systems (HDFS), Point-to-Multipoint (PMP), Point-to-Point (PTP) and Mesh Systems," is available at http://ieee802.org/16/docs/01/80216c-01_03r1.pdf.

[16] *See* http://ieee802.org/16/docs/01/80216-01_27rl.pdf.

[17] *Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2 –50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations*, 13 FCC Rcd 24649, 24650-51 (1998).

band will be targeting the same market, *i.e.*, that for broadband service to commercial buildings and campuses in urban areas, and their ability to compete effectively for customers will depend on their ability to offer seamless, nationwide connectivity. Any regulatory scheme that permits any one FSS operator to construct an unlimited number of gateway stations across the country runs a high risk of holding BWA deployment hostage to the FSS industry, which would absolutely negate BWA's priority in the 39 GHz band and, consequently, constitute a breach of faith with those BWA operators who bid hundreds of millions of dollars at the 39 GHz auction with the understanding that such priority would be preserved.

WHEREFORE, for the reasons set forth above, WCA reiterates its general support for the *FNPRM* and requests that the Commission amend its rules in accordance with the recommendations set forth in these comments.

Respectfully submitted,

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